WHAT IS CLAIMED IS:

1. A laser diode driver comprising:

a light-emitting circuit;

a drive circuit for driving the light-emitting circuit;

a bias circuit for adding a bias current to a pulse current outputted from the drive circuit;

a light-receiving circuit for receiving monitoring light outputted from the light-emitting circuit;

an I/V conversion circuit for subjecting an output from the light-receiving circuit to current-to-voltage conversion;

a maximum-value detection circuit for detecting the maximum value of an output voltage of the I/V conversion circuit;

an average-value detection circuit for detecting the average value of the output voltage of the I/V conversion circuit;

a first comparator for comparing the maximum value with a first reference value to feed back the comparison result to the drive circuit; and

a second comparator for comparing the average value with a second reference value to feed back the comparison result to the bias circuit.

2. The laser diode driver of Claim 1, wherein the second reference value is generated from the first reference value.

3. The laser diode driver of Claim 1, wherein the second reference value is generated from the maximum value detected by the maximum-value detection circuit.

4. The laser diode driver of Claim 1, further comprising an initial-bias determination circuit for automatically setting an optimum initial bias value for the bias circuit.

5. The laser diode driver of Claim 1, further comprising an adaptive drive circuit for rapidly increasing/decreasing the pulse current if a difference between the maximum value detected by the maximum-value detection circuit and the first reference value is large.

6. The laser diode driver of Claim 1, further comprising an adaptive bias circuit for rapidly increasing/decreasing the bias current if a difference between the average value detected by the average-value detection circuit and the second reference value is large.

7. The laser diode driver of Claim 1, further comprising:

a maximum-value detection circuit for detecting the maximum value of a drive current of the light-emitting circuit;

an average-value detection circuit for detecting the average value of the drive current of the light-emitting circuit; and

a threshold-current detection circuit which, if the maximum value of the output voltage of the I/V conversion circuit is larger than the first reference value, receives a signal from the first comparator, computes a threshold current based on the two maximum values and the two average values, and feeds back the computed threshold current to the bias circuit.

8. The laser diode driver of Claim 7, further comprising an amplifier circuit for amplifying the output current of the light-receiving circuit so as to increase the detection accuracy of the threshold-current detection circuit.

9. The laser diode driver of Claim 1, further comprising:

a first rising-edge detection circuit for detecting a rising edge of the output voltage of the I/V conversion circuit;

a first falling-edge detection circuit for detecting a falling edge of the output voltage of the I/V conversion circuit;

a first arithmetic circuit for computing a time difference between the rising and falling edges of the output voltage;

a second rising-edge detection circuit for detecting a rising edge of a drive current of the light-emitting circuit;

a second falling-edge detection circuit for detecting a falling edge of the drive current of the light-emitting circuit;

a second arithmetic circuit for computing a time difference between the rising and falling edges of the drive current; and

a third comparator for comparing outputs from the first and second arithmetic circuits with each other to feed back the comparison result to the bias circuit.

10. A laser diode driver comprising:

a light-emitting circuit;

a drive circuit for driving the light-emitting circuit;

a bias circuit for adding a bias current to a pulse current outputted from the drive circuit;

a light-receiving circuit for receiving monitoring light outputted from the light-emitting circuit;

an I/V conversion circuit for subjecting an output from the light-receiving circuit to

current-to-voltage conversion;

a maximum-value detection circuit for detecting the maximum value of an output voltage of the I/V conversion circuit;

a duty detection circuit for detecting the duty ratio of the output voltage of the I/V conversion circuit to feed back the detected duty ratio to the bias circuit; and

a comparator for comparing the maximum value with a first reference value to feed back the comparison result to the drive circuit.

11. The laser diode driver of Claim 10, wherein the duty detection circuit includes a charge pump circuit for receiving the output voltage of the I/V conversion circuit.

12. The laser diode driver of Claim 10, wherein the duty detection circuit includes:

two average-value detection circuits for detecting the respective average values of the non-inverted and inverted output voltages of the I/V conversion circuit, and

a comparator for comparing outputs from the average-value detection circuits with each other to feed back the comparison result to the bias circuit.

13. The laser diode driver of Claim 12, wherein the average-value detection circuits each include a low-pass filter circuit.